

☒ ORIGINAL ☐ REVISION NO. .

RALPH LEMADE

DATE 4/9/82

Project Director: W. A. Hendrix David Keith School/Lab TAL

Sponsor: Office of Energy Resources; Office of Planning & Budget; Atlanta, GA

Type Agreement: Contract dated 3/1/82 under DOE Grant DE-FG44-80R410182

Award Period: From 3/1/82 To ~~12/31/82~~ (Performance) (Reports)

Sponsor Amount: \$36,307 ~~2/21/83~~ Contracted through:

Cost Sharing:	N/A	6/30/83	GTRI/GIT
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Title: Evaluation of Grantees under the Institutional Conservation Program

OCA Contact Leamon R. Scott

2) Sponsor Admin./Contractual Matters:

same

Georgia Office of Energy Resources

Trinity - Washington Bldg

270 Washington St.

Atlanta, GA 30334

Defense Priority Rating: N/A

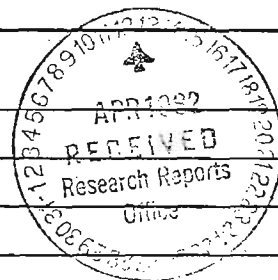
Security Classification: N/A

See Attached DOE Grant Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval – Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of \$500 or 125% of approved proposal budget category.

Equipment: Title vests with none proposed

COMMENTS:



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FORM OCA 4:781

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Computer Input
Project File
Other

SPONSORED PROJECT TERMINATION/CLOSEOUT SHEET

Date November 15, 1983

Project No. A-3202

~~XXXX~~ School/Lab TAL

Includes Subproject No.(s) _____

Project Director(s) Ralph Lamade

GTRI/STP

Sponsor Georgia Office of Energy Resources

Title "Evaluation of Grantees under the Institutional Conservation Program"

Effective Completion Date: June 30, 1983 (Performance) _____ (Reports) _____

Grant/Contract Closeout Actions Remaining:

☐ None

☐ Govt. Property Inventory & Related Certificate

☒ Final Invoice or Final Fiscal Report

☐ Classified Material Certificate

☐ Closing Documents

☐ Other _____

☐ Final Report of Inventions

Continues Project No. _____

Continued by Project No. _____

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Other _____



ENGINEERING EXPERIMENT STATION
Georgia Institute of Technology
A Unit of the University System of Georgia
Atlanta, Georgia 30332

September 21, 1982

State of Georgia
Office of Energy Resources
Trinity-Washington Building
270 Washington Street, S. W.
Atlanta, Georgia 30334

Attention: Mr. Paul Burks

Subject: Quarterly Progress Report No. 1, for the period March 1,
1982 to May 31, 1982

Reference: Contract No. DE-FG44-80R410182;
EES project A-3202

Dear Sir:

The progress made on the referenced contract for the subject reporting period consisted of the development of a system and format for collecting the required evaluation data on selected Institutional Conservation Program grantees. All available documents were reviewed including Georgia's State Plan, the Department of Energy rules and regulations 10 CFR Part 455, Technical Assistance and Energy Conservation Measures: Grant Programs for Schools and Hospitals and for Buildings Owned by Units of Local Government and Public Care Institutions, Grantee Responsibilities Required Under the Davis-Bacon Act, Office of Management and Budget Circular A-102 Standards Governing State and Local Grantee Procurement, and standard format documents presented at the April 10, 1980 Technical Assistance Workshop, including OMB form 038-R0402 grant application, Georgia Technical Assistance Program Guidebook for Architects and Engineers, Hospital Energy Audit, Energy Savings Calculations, and Georgia School Energy Audit.

A decision was made to begin the program with an evaluation of the largest grantee, the Atlanta Public Schools, during the next reporting period.

If you have any questions regarding this report, please contact me at 894-3412.

Sincerely,

David A. Keith, P.E.
Project Director

mro



ENGINEERING EXPERIMENT STATION
Georgia Institute of Technology
A Unit of the University System of Georgia
Atlanta, Georgia 30332

September 22, 1982

State of Georgia
Office of Energy Resources
Trinity-Washington Building
270 Washington Street, S. W.
Atlanta, Georgia 30334

Attention: Mr. Paul Burks

Subject: Quarterly Progress Report No. 2, for the period June 1, 1982
to August 31, 1982

Reference: Contract No. DE-FG44-80R410182;
EES Project A-3202

Dear Sir:

During the reporting period, site visits were made to a total of 22 sites of two grantees under the Institutional Conservation Program. The evaluation of the Atlanta City Schools was essentially completed, except for final typing correction. This report was divided into two grants, DE-FG-44-80R430313 (Grant A) and DE-FG-44-80R430443 (Grant B) with separate reports prepared for each grant. A total of 17 sites were visited between the two grants. In general, energy savings on Grant A exceeded expectations based on the TA while those on Grant B did not meet expectations. In addition, completion of the measures for Grant A was quite good, whereas there were some discrepancies noted in Grant B. These results will be discussed in greater detail in the reports. The reports were delayed as the data was re-formatted into the DOE forms provided by OER in August, 1982. These DOE-approved forms will be used on all project reports.

The Dougherty County Schools (Grant DE-FG-44-80R430116) were also visited during the reporting period. Results of the implementation of energy conservation measures in these schools, in terms of energy savings, have not yet been finally evaluated. No discrepancies in the installations were found, however.

State of Georgia
Office of Energy Resources
September 22, 1982
Page Two

During the next reporting period, EES will submit reports for Atlanta City Schools, Dougherty County Schools, and Vidalia City Schools. EES will visit other grantees in whatever order that OER recommends.

It does not appear that all reports will be completed by the contract termination date of December 31, 1982; therefore a no-cost extension to March 31, 1983 is requested.

If there are any questions concerning this report, please contact me at 894-3412.

Sincerely,

David A. Keith, P.E.
Project Director

mro



ENGINEERING EXPERIMENT STATION
Georgia Institute of Technology
A Unit of the University System of Georgia
Atlanta, Georgia 30332

January 11, 1983

State of Georgia
Office of Energy Resources
Trinity-Washington Building
270 Washington Street, S. W.
Atlanta, Georgia 30334

Attention: Mr. Paul Burks

Subject: Quarterly Progress Report No. 3, for the period
September 1, 1982 to December 31, 1982

Reference: Contract No. DE-FG44-80R410182; EES Project A3202

Dear Sir:

During the reporting period, three grant reports were completed and delivered to the Office of Energy Resources. These reports concerned Grant DE-FG44-80R430313 (Grant A) and Grant DE-FG44-80R430443 (Grant B) which were both made to the Atlanta Public Schools System and Grant DE-FG44-80R430116 which was awarded to Dougherty County Schools.

In general, each of the completed reports reveals satisfactory performance by the grantee and energy savings significant enough to provide a good payback period and thereby justify grant expenditures. There were some discrepancies as to ECM installation encountered during investigation of Grant DE-FG44-80R430443 for the Atlanta Public Schools. These discrepancies are detailed in the report.

Also during the reporting period, site visits were made to the four Vidalia City Schools which received funding under TA Grant DE-FG44-80R430049 and ECM Grant DE-FG44-80R43032. The evaluation of these grants was essentially completed during the grant period. Report completion is expected in early January, 1983.

In addition, preliminary grant investigation was done on the two grants (TA Grant DE-FG44-80R430077 and ECM Grant DE-FG44-80R430433) funded for the Fulton-DeKalb Hospital Authority.

Mr. Paul Burks
January 11, 1983
Page Two

A request for a three month no-cost extension of the project contract was processed, moving the project termination date from December 31, 1982 to March 31, 1983. It is anticipated that the remaining grantee evaluation reports will be completed within this period.

If there are any questions concerning this report, please contact me at 894-3412.

Sincerely,

David A. Keith, P.E.
Project Director

mro



ENGINEERING EXPERIMENT STATION
Georgia Institute of Technology
A Unit of the University System of Georgia
Atlanta, Georgia 30332

April 12, 1983

State of Georgia
Office of Energy Resources
Trinity-Washington Building
270 Washington Street, S.W.
Atlanta, GA 30334

Attention: Mr. Paul Burks
Subject: Quarterly Progress Report No. 4 for the period January 1, 1983
to March 31, 1983
Reference: Contract No. DE-FG44-80R410182; EES Project A-3202

Dear Sir:

During the reporting period, four grant evaluation reports were completed and delivered to the Office of Energy Resources. These completed reports were as follows:

Vidalia City Schools	- TA Grant DE-FG44-80R430049
	- ECM Grant DE-FG44-80R430432
Fulton-DeKalb Hospital Authority	- TA Grant DE-FG44-80R430077
	- ECM Grant DE-FG44-80R430433

In both of the above TA grant evaluations, the grantee implemented all feasible O&M procedure changes as recommended in the TA reports. The Vidalia City Schools showed significant savings in heating fuels as a result. No quantifiable results were realized in the Fulton-DeKalb Hospital Authority TA grant evaluation. The ECM grant evaluation for the Vidalia City Schools deals only with early procedure compliance because most of the ECM's had not yet been implemented. The ECM grant evaluation for the Fulton-DeKalb Hospital Authority indicates that all ECM's were satisfactorily installed, but actual savings figures cannot be determined because of the lack of steam metering devices in the buildings which were included in the grant.

In addition to the above evaluation reports, work was completed on evaluations of Barrow County Schools-ECM Grant DE-FG44-80R430408, and Jefferson City Schools-TA Grant DE-FG44-80R430062 and ECM Grant DE-FG44-80R430437. These reports are currently being typed and will soon be ready for delivery to OER.

Also during the reporting period, site visits were made to the Medical Center of Central Georgia in Macon for investigation of TA Grant DE-FG44-80R430020 and ECM Grant DE-FG44-80R430439, and to Coweta General Hospital in Newnan for investigation of TA Grant DE-FG44-80R430369 and ECM Grant DE-FG44-80R430440. At this time, report formation on each of these grants is well underway.

A request for a three month no-cost extension of the project contract was processed, moving the project termination date from March 31, 1983 to June 30, 1983. This extension will facilitate completion of the reports which are currently in progress and will also allow for possible modification of the contract to include the two or three additional grant evaluations which have been discussed with you.

If there are any questions concerning this report, please contact me at 894-3412.

Sincerely,



Ralph M. Lamade, P.E.
Project Director

RML/jb

A-3202

ENGINEERING EXPERIMENT STATION
Georgia Institute of Technology
A Unit of the University System of Georgia
Atlanta, Georgia 30332

August 17, 1983

State of Georgia
Office of Energy Resources
Trinity-Washington Building
270 Washington Street, S.W.
Atlanta, GA 30334

Attention: Mr. Paul Burks

Subject: Quarterly Progress Report No. 5 (Final Progress Report) for the
period April 1, 1983 to June 30, 1983

Reference: Contract No. DE-FG44-80R410182; EES Project A-3202

During the reporting period, eleven grant evaluation reports were completed
and delivered to the Office of Energy Resources. These completed reports
were as follows:

Barrow County Schools	ECM Grant DE-FG44-80R430408
Jefferson City Schools	TA Grant DE-FG44-80R430062
	ECM Grant DE-FG44-80R430437
Coweta General Hospital	TA Grant DE-FG44-80R430369
	ECM Grant DE-FG44-80R430440
Medical Center of Central Georgia	TA Grant DE-FG44-80R430020
	ECM Grant DE-FG44-80R430439
DeKalb County Schools	TA/ECM Grant DE-FG44-80R30210
	ECM Grant DE-FG44-80R430444
Floyd County Medical Center	TA/ECM Grant DE-FG44-80R430308
Truett-McConnell College	ECM Grant DE-FG44-81R431109

In general, each of the grant evaluation reports show compliance with grant guidelines and satisfactory installation of ECM's where applicable. In particular, ECM implementation in the main building and tower of the Medical Center of Central Georgia has proven to be very successful in reducing energy consumption. Weather adjusted annual consumption figures show a 35% and 18% reduction in natural gas and electricity usage, respectively in the time since ECM implementation. DeKalb County Schools' ECM implementation, which consisted of an extensive radio controlled, computerized energy management system has also shown very favorable results regarding energy savings, though at the time of the evaluation the system had only been on-line for three months.

Several problems of grant compliance were reported upon during the evaluation period. Specifically, the lack of Davis-Bacon Act procedure compliance by contractors at the Medical Center of Central Georgia and the lack of controlled financial data on a building-by-building basis at Truett-McConnell College.

Attached please find electricity and heating fuels consumption summary tables for the schools and hospitals evaluated under the monitoring program. Also included is a simple payback/cost benefit analysis which provides an indication of the effectiveness of the ICP grant program. Note that the energy consumption figures used in computing dollars of savings are only those which were documented in the individual monitoring reports of each grantee. For example, energy savings for DeKalb County Schools (as shown in Tables 1 and 2) are only documented over a 3-month consumption period. In areas where it is not specified, the consumption period is 12 months. Due to the fact that some consumption periods are less than 12 months, savings on an overall program basis would be slightly higher on an annual basis.

Sincerely, /

Ralph M. Lamade, P.E.
Project Director

RML/lbh
Attachment

Table 1

SAVINGS DUE TO ECM'S (SCHOOLS)
ELECTRICITY CONSUMPTION (KWh)

	No. of Schools	Pre-ECM Consumption	Post-ECM Consumption	Increase or Decrease	% Change
*Atlanta Public Schools (A)	9	8,848,996	7,159,336	-1,689,660	-19%
Atlanta Public Schools (B)	5	5,364,639	4,412,192	-952,447	-18%
Barrow County Schools	2	1,300,494	1,409,387	+108,893	+ 8%
**DeKalb County Schools (A)	5	1,498,260	1,282,400	-215,860	-14%
**DeKalb County Schools (B)	5	285,580	360,000	+74,420	+26%
Dougherty County Schools	8	5,062,340	4,369,427	-692,913	-14%
Jefferson City Schools	1	491,360	525,920	+34,560	+ 7%
Truett-McConnell College	6		Data not available at time of study		
Vidalia City Schools	4		Data not available at time of study		
TOTAL		22,851,669	19,518,662	-3,333,007	-15%

*Atlanta Public Schools (A) consumption is for 9-month period

**DeKalb County Schools consumption is for 3-month period

Table 2

SAVINGS DUE TO ECM'S (SCHOOLS)
HEATING FUELS CONSUMPTION (MBTu)

	No. of Schools	Pre-ECM Consumption	Post-ECM Consumption	Increase or Decrease	% Change
*Atlanta Public Schools (A)	10	39,903,642	35,697,225	-4,206,417	-11%
Atlanta Public Schools (B)	4	32,845,773	29,961,773	-2,884,000	- 9%
Barrow County Schools	2	11,715,337	9,870,148	-1,845,189	-16%
**DeKalb County Schools (A)	5	6,099,866	5,196,144	-903,722	-15%
**DeKalb County Schools (B)	5	5,889,231	5,570,343	-318,888	- 6%
Dougherty County Schools	8	25,766,131	18,884,484	-6,881,647	-27%
Jefferson City Schools	2	5,457,970	5,725,770	+267,800	+ 5%
Truett-McConnell College	6	Data not available at time of study			
Vidalia City Schools	4	Data not available at time of study			
TOTAL		127,677,950	110,905,887	-16,772,063	-14%

*Atlanta Public Schools (A) consumption is for 9-month period

**DeKalb County Schools consumption is for 3-month period

Table 3

SAVINGS DUE TO ECM'S (HOSPITALS)
ELECTRICITY CONSUMPTION (KWh)

	No. of Buildings	Pre-ECM Consumption	Post-ECM Consumption	Increase or Decrease	% Change
*Coweta General Hospital	1	1,083,000	959,250	-123,750	-11%
Floyd County Medical Center	5	6,703,200	6,954,600	+251,400	+ 4%
Fulton-DeKalb Hospital Authority	3	1,078,200	966,360	-111,840	-10%
Medical Center of Central Georgia	1	12,928,800	11,883,200	-1,045,600	- 8%
TOTAL		21,793,200	20,763,410	-1,029,790	- 5%

*Coweta General Hospital consumption is for 4-month period

Table 4

SAVINGS DUE TO ECM'S (HOSPITALS)
HEATING FUELS CONSUMPTION (MBTu)

	No. of Buildings	Pre-ECM Consumption	Post-ECM Consumption	Increase or Decrease	% Change
*Coweta General Hospital	1	93,861,000	90,324,000	-3,537,000	- 4%
Floyd County Medical Center	5	79,168,690	74,422,300	-4,746,390	- 6%
Fulton-DeKalb Hospital Authority	4	Data not available - No steam metering equipment			
Medical Center of Central Georgia	1	1,149,662,000	726,997,000	-422,665,000	-37%
TOTAL		1,322,691,690	891,743,300	-430,948,390	-33%

*Coweta General Hospital consumption is for 4-month period

SAVINGS CALCULATIONS

Heating Fuels

Hospitals	4,309,484 Therms
	x .40 \$/Therm
	<u>\$1,723,793.6</u>

Schools	167,720.63 Therms
	x .40 \$/Therm
	<u>\$ 67,088</u>

TOTAL_{HF} = \$1,790,881.60

Electricity

Hospitals	1,029,790 Kwh
	x .045 \$/Kwh
	<u>\$ 46,340.55</u>

Schools	3,333,007 Kwh
	x .06 \$/Kwh
	<u>\$199,980.42</u>

TOTAL_E = \$246,320.97

Total Savings = \$2,037,202.60

PAYBACK ON FEDERAL FUNDS

I. Total Federal Expenditure \$2,679,844

II. Total Savings Documented in
Monitoring Reports \$2,037,202.60

Payback period (I./II.) = 1.32 years

Cost Benefit (Return on one dollar
of federal funds
based on II. above) \$0.76